straight line passing through a center of the outer periphery of one pole and perpendicular to the central axis of the rotor, A, B and C are constants and e is a base of natural logarithm or a constant.

6. (ONCE AMENDED) A circular rotor for a synchronous motor according to claim 1, wherein the hyperbolic function is expressed as $X = A-B * (e^{cY} + e^{-cY})$ on a X-Y coordinate system with a X axis passing through a center of the outer periphery of one pole of the rotor and perpendicular to a central axis of the rotor, a Y axis perpendicular to the X axis and the central axis of the rotor and an origin as a crossing point of the X axis and the Y axis, where A, B and C are constants and e is a base of natural logarithm or a constant.

7. (ONCE AMENDED) A rotor for a synchronous motor according to claims 1 through 6, wherein the outer periphery of one pole of the rotor includes a region defined based on the hyperbolic function and a second region defined based on segments of straight lines or curves.

Please ADD the following claims:

8. (NEW) A synchronous motor, comprising:
a circular rotor with a plurality of magnetic poles perpendicular to a central axis of the rotor, wherein at least one magnetic pole of the plurality of magnetic poles has an outer edge that is defined by a curve of a hyperbolic function.

9. (NEW) A synchronous motor according to claim 8, wherein more than half of the outer periphery of the one pole of the rotor is defined by the hyperbolic function.

10. (NEW) A synchronous motor according to claim 8, wherein all of the outer periphery of the one pole of the rotor is defined by the hyperbolic function.

11. (NEW) A synchronous motor according to claim 8, wherein a central part of the outer periphery of the one pole is defined the hyperbolic function.

12. (NEW) A synchronous motor according to claim 8, wherein the hyperbolic function is expressed as $R = A-B * (e^{c\theta} + e^{-c\theta})$, where R represents a distance from a central

axis of the rotor or a fixed point, θ represents a rotational angle from a straight line passing through a center of the outer periphery of one pole and perpendicular to the central axis of the rotor, A, B and C are constants and e is a base of natural logarithm or a constant.

13.　(NEW) A synchronous motor according to claim 8, wherein the hyperbolic function is expressed as $X = A - B * (e^{cY} + e^{-cY})$ on a X-Y coordinate system with a X axis passing through a center of the outer periphery of one pole of the rotor and perpendicular to a central axis of the rotor, a Y axis perpendicular to the X axis and the central axis of the rotor and an origin as a crossing point of the X axis and the Y axis, where A, B and C are constants and e is a base of natural logarithm or a constant.

14.　(NEW) A synchronous motor according to claim 8, wherein the outer periphery of one pole of the rotor includes a region defined based on the hyperbolic function and a second region is defined based on segments of straight lines or curves.

REMARKS

In accordance with the foregoing, the specification and claims 1-7 have been amended. Claims 8-14 have been added. Claims 1-14 are pending and under consideration.

On page 3, in paragraph 1 of the Office Action, the Title is objected to. The above amendment to the Title should obviate the objection. Reconsideration and withdrawal of the objection to the title is respectfully requested.

On page 3, paragraph 3 - page 4, paragraph 2 of the Office Action, the drawings are objected to. The enclosed Letter to the Examiner Requesting Approval of changes to the drawings should obviate the objection to FIGs 4 and 7-8. The amendments to the Specification should obviate the objection to FIGs. 3-4. FIG. 2, items a-c, shows the features in claim 7 described by the Examiner. Reconsideration and withdrawal of the objection to the drawings is respectfully requested.

On page 4, in paragraph 5 of the Office Action, claim 2 is rejected under 35 U.S.C. §112, second paragraph. The above amendment to claim 2 should obviate the objection. Reconsideration and withdrawal of the rejection of claim 2 under 35 U.S.C. 112, second paragraph is respectfully requested.